

NEW SPECIES OF NEARCTIC *HYDROPORUS* (COLEOPTERA: DYTISCIDAE)

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Abstract.—Two new species *Hydroporus sulphurius* and *Hydroporus ouachitus* are described from the interior Highlands of Arkansas and a third new species, *Hydroporus alleghenianus*, is described from the Appalachian Highlands of Virginia and Tennessee. All three species are placed in the *pulcher* group of *Hydroporus*.

Introduction

The *pulcher* group of the genus *Hydroporus* was first keyed and the species discussed by Fall (1923) in a revision of the entire genus *Hydroporus*. Since that revisionary work one new species has been described in the *pulcher* group by Leech (1949) and three species by Wolfe and Matta (1978). While going through the material at the National Museum of Natural History the authors discovered an additional new species in this group from Sulphur Springs, Arkansas. During a collecting trip to Arkansas to obtain additional material of this species a second new species in this group was collected. These two species and a third species which has been in the senior author's collection for several years are described below.

Hydroporus sulphurius, new species

Diagnosis.—This species will key to the first part of couplet 7 in Fall (1923) but does not fit either of the species listed there. The completely infusate pronotum separates it from all species which will key to this couplet except *H. laetus*, which is similar in size, pronotal markings and lack of prosternal setae. The punctation of the two species is similar but the punctures of *H. laetus* are slightly larger and more densely applied than that of *H. sulphurius*; in addition the elytral markings of *sulphurius* are darker than those of *laetus*. The aedeagus is distinct and may be used to separate this species from all others in the group (see Fig. 1a, b).

Description.—Holotype: Male: length 3.15 mm, width 1.55 mm, L/W = 2.03. Form elongate oval. Lateral margins of the pronotum evenly rounded towards the anterior angles, with a distinct bead which appears flattened on top and which is about one half as wide as the last antennal segment. Prosternal setae absent; prosternal process with an angulate protuberance and a poorly defined anterior file. Posterior to the procoxae the prosternal pro-

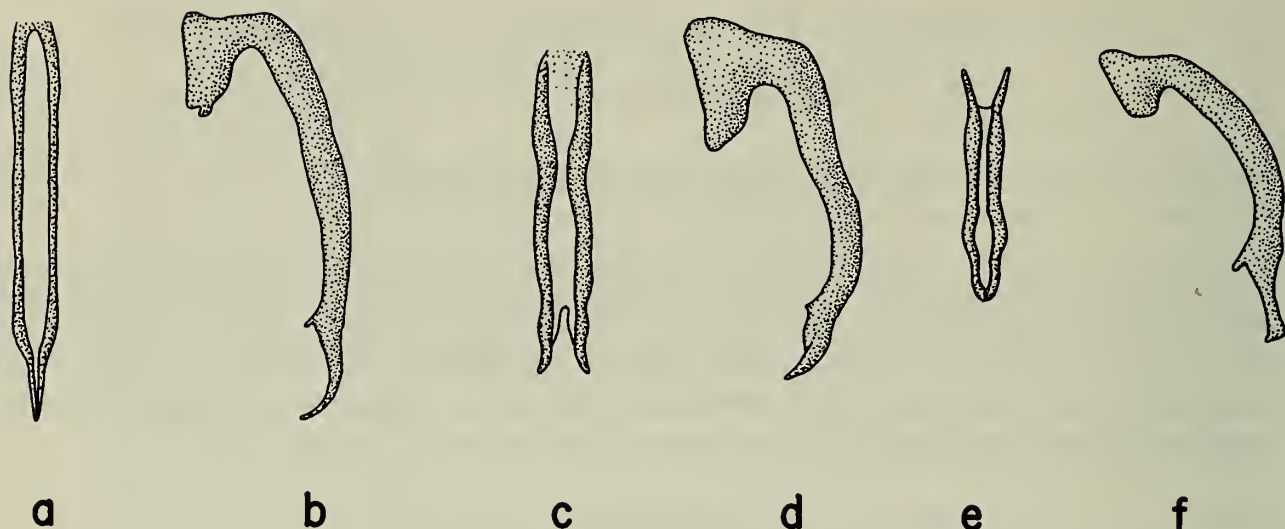


Fig. 1. *H. sulphurius*, aedeagus, a—dorsal, b—lateral; *H. ouachitus*; aedeagus, c—dorsal, d—lateral; *H. alleghenianus*, aedeagus, e—dorsal, f—lateral.

cess is lanceolate shaped, rounded medially, with a well developed flattened lateral margin and is produced to a bluntly rounded tip.

Head pale brown; antennae concolorous with head, vaguely infuscate on last segment. Pronotum rather uniformly reddish brown; lateral margins lighter. Each elytron reddish brown with three light brown pale patches which extend across the width of the elytron (except for a narrow dark band at the suture); one at the anterior margin, one posteriomedially and one at the apex. The posteriomedial spot is interrupted by a narrow dark band cutting across its middle and the apical spot extends anteriorly as a vague narrow streak but does not reach the posteriomedial spot. Ventral surface light brown with the metacoxal plates, metasternum and prosternal process slightly darker.

Head sparsely punctured, the punctures quite fine. Pronotum with a narrow band of coarse punctures near the anterior margin and a somewhat broader band of coarse punctures on the posterior margin. The disc is as finely punctured as the head. Elytral punctures fine and sparsely distributed, separated by at least the width of one puncture, usually by the width of several punctures. The entire dorsal surface is finely and distinctly alutaceous between the punctures; the individual spaces outlined by the reticulation about the size of a puncture. Ventral surface finely punctured except for the metacoxal plates and metasternum where the punctures are 4–5 times larger than normal.

The protarsal claws are unmodified and the protarsi do not exhibit any appreciable sexual dimorphism. The aedeagus is apically bifid and is illustrated in figure 1a, b.

Allotype.—Length 3.1 mm, width 1.55 mm, L/W = 2.00. The dark markings of the elytra and pronotum are slightly darker than those of the male.

The allotype is otherwise similar to the male in color, punctuation and body form.

Variation.—Since the sexes are not easily distinguished on the basis of external morphology the variation in the type series is not reported by sex. Average length 3.24 mm (2.9–3.5); average width 1.55 mm (1.4–1.7); $\bar{L}/\bar{W} = 2.087$; $n = 20$. The color pattern is remarkably constant within the type series. The pronotum is usually concolorous; however a few specimens have a vague paler area on the disc. Some specimens have a dark spot at the anterior edge of the anterior elytral pale spot, some have the post median pale spot reduced or split by a dark streak. The dark areas on the ventral surface vary in extent in the type series from the typical reduced dark areas to large infuscate patches on the ventral abdominal segments.

Habitat.—The type locality is located on the Ozark plateau in an area of numerous springs, and small sand bottom streams. No specific habitat data is available for this species; however it is probably found at the margins of the smaller streams. The collection from which the type series was obtained contained a large series (280) of *Hydroporus wickhami* Zaitzev.

Type data.—The holotype, allotype and 31 paratypes are from Sulphur Springs, Arkansas; VII-20-1955; P. J. Spangler.

Etymology.—The authors wish to thank Dr. Paul Spangler for suggesting the name for this species. It is named after the type locality and also for the mood of the senior author when he failed to collect additional specimens during a visit to the type locality in the summer of 1978.

Deposition of type material.—The holotype and allotype are deposited at the National Museum of Natural History (NMNH) and are assigned type number 97565. Sixteen paratypes have also been deposited in the NMNH, two paratypes with the Canadian National Collection (CNC) and 13 paratypes have been retained by the authors (6 by JFM and 7 by GWW).

Hydroporus ouachitus, new species

Diagnosis.—This species is similar to *H. pulcher* and *H. cocheconis* and will run to those species in existing keys. It may be separated from those species by the metasternal and metacoxal punctuation which is coarser than *pulcher* but finer than *cocheconis*; by the smaller size, the reduction of the anterior pronotal dark spot and by the shape of the male genitalia. In addition all of the type material has the last antennal segment partially infuscate. This is a variable character in *pulcher* but the last antennal segment is usually not infuscate and was not infuscate on any specimens which are collected with the type series.

Description.—Holotype: Male: Length 2.82 mm, width 1.3 mm, L/W ratio 2.7. Form elongate oval, widest at the middle; with the sides of the elytra very slightly concave basally. Lateral margin of the pronotum with a distinct

lateral bead which tapers slightly in the posterior fourth. Lateral edge of the pronotum evenly rounded towards the anterior angles. No prosternal setae present although a few short stiff fine hairs are present on the prosternum at the base of the coxae. Prosternal process distinctly angulate and protuberant, the prosternal file present but very poorly developed. The posterior half of the prosternal process broadly lanceolate with the medially portion slightly rounded and lateral edges margined; the tip bluntly rounded.

Head reddish brown, antennae with the last segment infusate. Pronotum reddish brown, with a diffuse dark spot at the anterior margin which reaches from the central line to approximately half the distance to the margin on each side. Posterior margin of pronotum with a thin dark band which narrows laterally. Elytra dark brown with subbasal, postmedial and apical pale areas which are separated from the suture and the lateral margin by thin dark bands. Ventral surface yellow-brown, the legs, prosternum and head reddish brown.

Dorsal surface finely and densely microreticulate; punctation of head fine, separated by 3–4 times the width of the punctures. Pronotum with discal punctures similar to those of the head; with a band of coarser punctures near the anterior margin and with a few coarse punctures scattered along the posterior margin. Elytra rather evenly punctured, the punctures separated by 1–1½ puncture diameters. The elytral punctation is intermediate to *H. pulcher* and *H. cocheconis*. Ventrally metacoxae and metasternum coarsely punctured, the punctures separated by less than ½ a puncture diameter. The abdominal punctures fine, slightly coarser basally.

Pro- and mesotarsi short and thickened, the first three segments with a glandular pubescence and small palettes. The anterior protarsal claw is not modified. Aedeagus bifid and is in figure 1b.

Allotype.—Length 3.0 mm, width 1.45 mm, L/W ratio 2.07. Similar to the male except as follows: slightly longer and broader, the anterior dark spot of the pronotum is less diffuse; the dark markings of the elytra are reduced, the subbasal pale spot not separated from the margin by a dark band. Last segment of antennae infusate only at the tip. Ventral punctation slightly finer.

Variation.—Average length 2.94 mm (2.80–3.20); Average width 1.40 mm (1.35–1.45); $\bar{L}/\bar{W} = 2.10$; ($n = 10$). Males average 0.1 mm shorter than females in this small sample. Minor variations in color pattern are exhibited by the type material. The extremes in variation are exhibited by the primary types with the male being the darkest specimen collected and the female the lightest.

Habitat.—The type series was collected from the margin of a pool in the bedrock of a small temporary stream. The stream on either side of the pool was dry at the time of collection as were many of the neighboring streams. Grass and brush grew at the stream margin and extended partially into the

water. Most of the specimens were washed out of the roots and sand near these plants.

Type data.—The Holotype, allotype and 11 paratypes were collected from a small unnamed stream where it crosses federal highway 59 approximately 2 miles south of Mena, Arkansas on July 19, 1978, by J. F. Matta.

Deposition of type material.—The primary types are retained in the authors collection (JFM) but will eventually be deposited in the USNM and have been assigned type number 97566. Two paratypes are deposited in the NMNH and two paratypes are deposited in the CNC. The remaining paratypes are retained by the authors; 4 by JFM and 3 by GWW.

Etymology.—This species is named for the Ouachita mountains in which it was first collected.

Hydroporus alleghenianus, new species

Diagnosis.—A delicate little species which is similar to *Hydroporus laetus* Leech and *Hydroporus cocheconis* Fall and will key to the latter species in Fall's (1923) key. It is smaller than either species with a maximum length of 3.1 mm. In addition it may be separated from *cocheconis* by the more distinct elytral maculation (the distal pale patches of the elytra are reduced in *cocheconis*) and from *laetus* by the pale discal and lateral portions of the pronotum. The aedeagus is similar to *laetus* but has both the subapical tooth and the tip more distinctly produced ventrally.

Description.—Holotype, male: Length 2.8 mm; width 1.35 mm; L/W = 2.07. Body form an elongate oval; elytra parallel sided for the basal one-third. Clypeal margin not thickened. Pronotum margined laterally, the margin half as wide as the terminal antennal segment (approximately 0.1 mm), tapering slightly basally. Prosternal setae absent; prosternal process with a distinct protuberance and a reduced anterior file. The apical portion of the prosternal process almost flat, lanceolate shaped with a barely perceptible median raised area and with margins laterally.

Head yellow brown with faint darker markings at the antennal bases. Antennae and palps a slightly darker yellow but without infuscation. Pronotum yellow-brown, with a dark bar on the apical margin which does not reach beyond the eyes laterally. Elytra yellow-brown, lighter than the pronotum, with a brown stripe along the suture, a short brown stripe along the basal margin extending from the sutural stripe one-half the width of the elytra, a brown patch extending from the suture to the elytral margin sub-basally and another postmedially. The tips of the elytra are narrowly margined with brown. The ventral surface light brown throughout, somewhat darkened at points of articulation.

Head with surface microreticulate and finely punctured (about as in *pulcher*). Pronotal punctation on the apical margin slightly coarser than the

head; becoming coarser basally and laterally; microreticulations present between the punctures. Elytral punctation fine, with microreticulations between the punctures. Elytra with a sparse covering of light setae. Ventral surface with the metacoxae and metasternum coarsely punctured. The abdomen finely punctured.

Protarsi not enlarged, equipped with glandular pubescence ventrally; the claws almost identical, the anterior one slightly thickened. The aedeagus is distinctive with a strong subapical tooth and a rounded tip which is split dorsoventrally and also produced ventrally (Fig. 1c, d).

Allotype.—Female, length 2.8 mm, width 1.4 mm, L/W = 2.00. The female is similar to the male except as follows: slightly broader than the male with the ground color of the elytra slightly more flavous. The anterior pronotal spot is broader and more diffuse than in the male.

Variation.—Average length 2.77 mm (2.6–3.1); average width 1.3 mm (1.2–1.5); \bar{L}/\bar{W} = 2.13; (n = 10). Specimens from Tennessee have the ground color of the head, pronotum and elytra darker—approaching reddish brown. Specimens from Connecticut have the dark markings of the pronotum and elytra expanded; in some cases greatly so. The subbasal and post median dark spots are frequently joined and occasionally form a large dark spot covering most of the elytra. The basal dark area is rarely expanded and connected to the subbasal dark spot. The pronotal coloring is sometimes expanded and may cover the entire pronotum in rare instances.

Habitat.—Rarely encountered throughout the east but taken in abundance where found. The primary types were taken at the margins of a small tributary of Back Creek near the point where it crosses Virginia Rt. 39. During the first collection (1973) the stream was flowing at a slow rate; during the second collection there was insufficient water to create a flow. During both collections *H. alleghenianus* were removed from the sandy margins of the stream. The beetles were observed swimming actively at the stream margin and hiding under small pieces of gravel. They rarely rested in the open, usually digging their way under small rocks or gravel before resting. Other aquatic beetles taken in the same collection include *Hydroporus blanchardi* Sherman, *Hydroporus mellitus* LeConte, *Hydroporus stratiopunctatus* Melshiemer, *Hydroporus sulcipennis* Fall, *Hydroporus carolinus* Fall, *Hydroporus pulcher* LeConte, *Uvarus* sp., *Paracymus confusus* Wooldridge, *Laccobius reflexipennis* Malcolm and *Dineutus discolor* Aube.

Type data.—The Holotype, allotype and 9 paratypes are from Bath Co., Virginia VIII-9-1973, J. F. Matta. Other paratypes (15) from the same locality were collected VIII-7-77. Additional paratypes are designated as follows: TENNESSEE, Morgan Co. Flat Fork Creek GWW+JAW, 2 August 1978, 53 specimens; Stewart Co. Hickman Creek, GWW+RER, 25 May 1978, 4 specimens.

Etymology.—This species is named after the Alleghenian Section.

Deposition of type material.—The primary types are retained in the author's collection (JFM) but will eventually be deposited in the (NMNH) and have been assigned type number 79567. Two paratypes have been placed in the NMNH, 2 in the Canadian National Collection and the remaining paratypes are retained by the authors.

Literature Cited

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